

INITIAL STUDY

APPENDIX C: ENERGY DATA

APPENDIX C
ENERGY CALCULATION WORKSHEETS

EXISTING CONDITIONS

Melrose and Seward Project
Energy Calculation Worksheets

ANNUAL ENERGY CONSUMPTION SUMMARY – EXISTING USE

Land Use	Direct Electricity Consumption (kWh/yr) ¹	Indirect Water-Related Electricity Consumption (kWh/yr) ²	Total Electricity Consumption (kWh/yr)	Natural Gas Consumption (kBtu/yr) ³	Natural Gas Consumption (cf/yr) ⁴	VMT (miles) ⁵	Gasoline Consumption (gal/yr) ⁶	Diesel Consumption (gal/yr) ⁷
Existing Uses	105,913	25,685	131,598	87,357	89,628	147,660	5,494	569

Notes:

kWh/yr = kilowatt hours per year; kBtu/yr = kilo-British thermal unit per year; cf/yr = cubic feet; gal = gallons

- 1 Source: CalEEMod data sheets prepared for the air quality and greenhouse gas analyses.
- 2 Based on a site- and land use-specific consumption rate of 1.5054 million gallons per year for indoor water use and 0.922667 gallons per year for outdoor water use. The delivery, treatment, and distribution of water within Southern California requires 0.0111 kWh of electricity per indoor gallon and 0.009727 kWh of electricity per outdoor gallon. Source: CalEEMod.
- 3 Source: CalEEMod data sheets prepared for the air quality and greenhouse gas analyses.
- 4 1 kBtu/yr = 1.026 cf/yr.
- 5 Source: CalEEMod data sheets prepared for the air quality and greenhouse gas analyses.
- 6 Based on a county-specific percentage of VMT by gasoline-powered fleet of 91.52 percent and a county-specific gasoline mpg weighted for associated percentage of VMT of 24.60 mpg for 2022 (the baseline year). Source: EMFAC2021; Season: Annual, Vehicles: All, Model Year: Aggregate, Speed: Aggregate.
- 7 Based on a county-specific percentage of VMT by diesel-powered fleet of 4.41 percent and a county-specific diesel mpg weighted for associated percentage of VMT of 11.45 mpg for 2022 (the baseline year). Source: EMFAC2021; Season: Annual, Vehicles: All, Model Year: Aggregate, Speed: Aggregate.

Source (table): EcoTierra Consulting, Inc., 2021.

CONSTRUCTION

CONSTRUCTION ELECTRICITY CONSUMPTION FROM WATER USAGE

Phase	Duration (days)	Daily Acreage Disturbed ¹	Associated Water (gal) ²	Associated Electricity (kWh) ³
Demolition	20	0	0	0
Grading	50	0.5	75,500	755
Foundation	60	0	0	0
Building Construction	330	0	0	0
Architectural Coating	20	0	0	0
Total			75,500	755

Notes:
gal = gallons; kWh = kilowatt hours

- Determined by totaling the acres-per-day of grading associated with specific construction equipment included in Appendix A of the CalEEMod Users Guide and the project-specific equipment list.
- Water associated with dust control is based on an application rate of 3,020 gal/acre/day. Source: Air & Waste Management Association, Air Pollution Engineering Manual (1992 Edition).
- Each gallon of delivered water for outdoor use in Southern California is associated with 0.009727 kWh of electricity. Source: CalEEMod.

Source (table): EcoTierra Consulting, Inc., 2021.

**CONSTRUCTION ELECTRICITY CONSUMPTION FROM EQUIPMENT
(GENERATOR EQUIVALENCY)**

Generator ¹	
Foundation	
Horse Power (kW)	84
Typical Load (%)	74
Average Output (kW)	62.16
Daily Usage (hours)	8
Average Daily Output (kWh/day)	497.28
Duration (days)	60
<i>Total – Grading & Foundation (kWh)</i>	
<i>29,837</i>	
Building Construction	
Horse Power (kW)	84
Typical Load (%)	74
Average Output (kW)	62.16
Daily Usage (hours)	8
Average Daily Output (kWh/day)	497.28
Duration (days)	330
<i>Total – Framing & Construction (kWh)</i>	
<i>164,102</i>	
Total Electrical Consumption – Equipment (Generators)	
193,939 kWh	

Notes:
kW = kilowatt; % = percent; kWh = kilowatt hours

- Horse power rating, load factor, daily usage hours information is based on project-specific equipment assumptions contained in the CalEEMod sheets prepared for the air quality and greenhouse gas analyses.

Source (table): EcoTierra Consulting, Inc., 2021.

Melrose and Seward Project
 Energy Calculation Worksheets

CONSTRUCTION ELECTRICITY CONSUMPTION FROM TRAILER ¹

Land Use	Size (sf)	Annual Electricity (kWh/year)	Construction Duration (years)	Total Electricity (kWh)
General Office	1,000	12,990	1.32	17,083

Notes:
 sf = square feet; kWh = kilowatt hours
 1 Based on CalEEMod defaults for 1,000 square-foot General Office land use and Project-specific construction duration.

Subtotal Water Conveyance	755 kWh
Subtotal Generator	193,939 kWh
Subtotal Trailer	17,083 kWh
Total Construction Electricity	211,777 kWh

Construction Diesel Consumption From Off-Road Equipment

OFFROAD2017 Consumption Rate:¹ 0.05 gallons per hp-hr

Total hp-hr: 856,564 hp-hr

Total Off-Road Diesel Consumption: 42,828 gallons

1 California Air Resources Board, OFFROAD2017: average of <50 hp and >50 hp.

Construction Phase ²	Equipment ²	Number ²	Hours/Day ²	HP ²	Load ²	Days ²	Total hp-hr
Demolition	Concrete/Industrial Saws	1	8	81	0.73	20	9,461
Demolition	Rubber Tired Dozers	1	8	247	0.40	20	15,808
Demolition	Tractors/Loaders/Backhoes	3	8	97	0.37	20	17,227
Grading	Bore/Drill Rigs	1	8	221	0.50	50	44,200
Grading	Excavators	1	8	158	0.38	50	24,016
Grading	Rubber Tired Dozers	1	8	247	0.40	50	39,520
Grading	Tractors/Loaders/Backhoes	2	7	97	0.37	50	25,123
Foundation	Forklifts	2	8	89	0.20	60	17,088
Foundation	Generator Sets	1	8	84	0.74	60	29,837
Foundation	Pumps	2	8	84	0.74	60	59,674
Building Construction	Cranes	1	6	231	0.29	330	132,640
Building Construction	Forklifts	1	6	89	0.20	330	35,244
Building Construction	Generator Sets	1	8	84	0.74	330	164,102
Building Construction	Tractors/Loaders/Backhoes	1	6	97	0.37	330	71,062
Building Construction	Welders	3	8	46	0.45	330	163,944
Architectural Coating	Aerial Lifts	1	8	63	0.31	20	3,125
Architectural Coating	Air Compressors	1	6	78	0.48	20	4,493
Total							856,564

Notes:

hp = horse power; hp-hr = horse power hours; gal = gallons

1 Fuel usage estimates per horsepower-hour taken from Table A9-3-E of the SCAQMD *CEQA Air Quality Handbook*.

2 Equipment details based on project-specific assumptions. Source: CalEEMod data sheets prepared for the air quality and greenhouse gas analyses. Source (table): EcoTierra Consulting, Inc., 2021.

**Melrose and Seward Project
Energy Calculation Worksheets**

Construction Diesel Consumption From On-Road Equipment

EMFAC2017 Diesel Fuel Consumption Factor – Vendor:¹ 13.63 miles per gallon
 Total On-Road Vendor VMT: 50,094 miles
 Total Vendor Diesel Consumption: 3,675 gallons

EMFAC2017 Diesel Fuel Consumption Factor – Hauler:² 5.88 miles per gallon
 Total On-Road Hauler VMT: 75,180 miles
 Total Hauler Diesel Consumption: 12,784 gallons

Total On-Road Diesel: 16,459 gallons

- 1 California Air Resources Board, EMFAC2021: Los Angeles County, 2022 (construction year), Season: Annual, Vehicles: LHDT1, LHDT2, MHDT, Model Year: Aggregate, Speed: Aggregate.
- 2 California Air Resources Board, EMFAC2021: Los Angeles County, 2022 (construction year), Season: Annual, Vehicles: HHDT, Model Year: Aggregate, Speed: Aggregate.

Phase ¹	Days ¹	Vendor			Hauler		
		Daily Trips ¹	Miles/Trip ¹	VMT	Total Trips ¹	Miles/Trip ¹	VMT
Demolition	20	0	6.9	0	84	20	1,680
Grading	50	0	6.9	0	3,675	20	73,500
Foundation	60	0	6.9	0	0	20	0
Building Construction	330	22	6.9	50,094	0	20	0
Architectural Coating	20	0	6.9	0	0	20	0
Total				50,094			75,180

¹ Equipment details based on project-specific assumptions. Source: CalEEMod data sheets prepared for the air quality and greenhouse gas analyses. Source (table): EcoTierra Consulting, Inc., 2021.

Subtotal Off-Road 42,828 gallons
 Subtotal On-Road 16,459 gallons
Total Construction Diesel 59,287 gallons

Melrose and Seward Project
Energy Calculation Worksheets

Construction Gasoline Consumption From On-Road Equipment

EMFAC2017 Gasoline Fuel Consumption Factor – Worker:¹ 25.34 miles per gallon

Total On-Road Worker VMT: 111,573 miles

Total Worker Gasoline Consumption: 10,475 gallons

- 1 California Air Resources Board, EMFAC2021: Los Angeles County, 2022 (construction year), Season: Annual, Vehicles: LDA, LDT1, LDT2, Model Year: Aggregate, Speed: Aggregate.

Phase ¹	Days ¹	Trips ¹	Miles/Trip ¹	VMT
Demolition	20	13	14.7	3,822
Grading	50	13	14.7	9,555
Foundation	60	13	14.7	11,466
Building Construction	330	49	14.7	237,699
Architectural Coating	20	10	14.7	2,940
Total				111,573
1 Equipment details based on project-specific assumptions. Source: CalEEMod data sheets prepared for the air quality and greenhouse gas analyses. Source (table): EcoTierra Consulting, Inc., 2021.				

OPERATION

Melrose and Seward Project
Energy Calculation Worksheets

ANNUAL ENERGY CONSUMPTION SUMMARY

Land Use	Direct Electricity Consumption (kWh/yr) ¹	Indirect Water-Related Electricity Consumption (kWh/yr) ²	Total Electricity Consumption (kWh/yr)	Natural Gas Consumption (kBTU/yr) ³	Natural Gas Consumption (cf/yr) ⁴	VMT (miles) ⁵	Gasoline Consumption (gal/yr) ⁶	Diesel Consumption (gal/yr) ⁷
Enclosed Parking with Elevator	365,568	0	365,568	0	0	0	0	0
Fast Food Restaurant w/o Drive Thru	18,260	1,206	19,466	97,199	99,726	14,935	529	58
General Office Building	812,538	167,260	979,798	670,181	687,606	87,048	3,082	339
Commercial	0	0	0	0	0	1,050,410	37,188	4,087
Total:	1,196,366	168,467	1,364,833	767,380	787,332	1,152,393	40,799	4,484

Notes:

kWh/yr = kilowatt hours per year; kBTU/yr = kilo-British thermal unit per year; cf/yr = cubic feet; gal = gallons

1 Source: CalEEMod data sheets prepared for the air quality and greenhouse gas analyses.

2 Based on size- and land use-specific yearly consumption rates for indoor and outdoor water use. The delivery, treatment, and distribution of water within Southern California requires 0.0111 kWh of electricity per indoor gallon and 0.009727 kWh of electricity per outdoor gallon. Source: CalEEMod.

3 Source: CalEEMod data sheets prepared for the air quality and greenhouse gas analyses.

4 1 kBTU/yr = 1.026 cf/yr.

5 Source: CalEEMod data sheets prepared for the air quality and greenhouse gas analyses.

6 Based on a county-specific percentage of VMT by gasoline-powered fleet of 89.96 percent and a county-specific gasoline mpg weighted for associated percentage of VMT of 25.41 mpg for 2024 (the operation year). Source: EMFAC2021; Season: Annual, Vehicles: All, Model Year: Aggregate, Speed: Aggregate.

7 Based on a county-specific percentage of VMT by diesel-powered fleet of 4.61 percent and a county-specific diesel mpg weighted for associated percentage of VMT of 11.84 mpg for 2024 (the operation year). Source: EMFAC2021; Season: Annual, Vehicles: All, Model Year: Aggregate, Speed: Aggregate.

Source (table): EcoTierra Consulting, Inc., 2021.

Melrose and Seward Project
Energy Calculation Worksheets

NET ANNUAL ENERGY CONSUMPTION SUMMARY – PROJECT

	Electricity (kWh/yr)	Natural Gas (cf/yr)	Gasoline (gal/yr)	Diesel (gal/yr)
Project Consumption	1,364,833	787,332	40,799	4,484
Existing Consumption	131,598	89,628	5,494	569
Net Consumption:	1,233,235	697,704	35,305	3,915
Notes: kWh/yr = kilowatt hours per year; cf/yr = cubic feet per year; gal/yr = gallons per year Source (table): EcoTierra Consulting, Inc., 2021.				